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**NAVAL WAR COLLEGE  
Newport, R.I.**

**Fixing the Nation's Space Launch Woes:  
Operationally Responsive Space for Tomorrow's Joint Force Commander—Panacea  
or Pipedream**

**by**

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**A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.**

**The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.**

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## **Abstract**

### *Fixing the Nation’s Space Launch Woes: Operationally Responsive Space for Tomorrow’s Joint Force Commander—Panacea or Pipedream*

The recent formation of a comprehensive Operationally Responsive Space (ORS) program is a critical first step in addressing the long-recognized inability of the nation to respond to emergent space needs of the warfighters in an adaptive and operationally-relevant timeframe. A proper assessment of the initial ORS source documents is crucial in identifying the key ORS elements and determining if Joint Functional Commander requirements will be better met by the envisioned processes and capabilities. This paper gives a brief review of the problem, assesses the key functions and activities proposed within U.S. Strategic Command’s Concept of Operations, and explores the process needed to integrate ORS into the campaign planning process and operations execution. Finally, this paper will draw some conclusions concerning timely space support to the warfighter and identify further areas of effort required to increase the likelihood of program success.

## **Introduction**

The successful launch and orbit of the United States' first satellite, Explorer-1, from Cape Canaveral on 31 January 1958 marked the nation's first step in its "space race" with its Cold War competitor the Soviet Union. More importantly, it was a watershed event that ushered in a new military operating media that offered rapid, around-the-clock access to any location in the world. The intervening fifty years have seen the nation grow from fledgling space explorer to the most dominant space power in the world, to include operating more national and military space systems than the rest of the world combined.

History has demonstrated on multiple occasions that a superior force or capability is worthless if it is not at the right location, at the right time, and integrated effectively to ensure unity of effort. Sadly, the nation's space providers have been forced to rely on a strategy of forward-deployed forces due to protracted satellite preparation, launch, and deployment timelines—a long recognized Achilles heel and potential critical vulnerability. In order to meet emergent space needs of combatant commanders on timelines predicated on operational need, the Department of Defense (DOD) recently unveiled a new construct called Operationally Responsive Space (ORS). While ORS is a positive step toward addressing space power's most significant operational issues, additional actions are still necessary to enhance requisite integrated planning and coordination. This paper will provide a brief background of the issue, analyze current ORS activities, and identify areas requiring further activity, as well as recommending some possible solutions to aid in timely campaign planning and operational execution. While briefly addressed, the focus of this paper is not on the technical capabilities of proposed satellites and launch vehicles.

## **Background**

During the Cold War the existence of the nation’s first and second generation space systems were shrouded in great secrecy, and focused primarily on supporting national-level intelligence agencies and nuclear war planners. Due to their cutting-edge technologies, extended research and development (R&D) timelines, and low production numbers, they were extremely expensive and deployed in small quantities. Their limited capacity, coupled with their highly classified and compartmentalized nature, prohibited widespread use by operational commanders. However, that changed during America’s “first space war”—Operation DESERT STORM—when the missile warning, communications, intelligence, weather, and precision navigation capabilities provided by a variety of space-based systems were made available at the operational and tactical levels.<sup>1</sup> The benefits space systems offered were immediately grasped by a new generation of warfighters and efforts to enhance integration of untapped capabilities began in all the military services. However, DESERT STORM also exposed one blemish that is still witnessed today—the nation’s difficulty in responsively launching new payloads.

Because satellites were expensive and difficult to manufacture, the U.S. Air Force utilized a launch-to-schedule methodology to build and replenish constellations on a planned timeline.<sup>2</sup> In turn, this dictated the entire acquisition schedule of satellites and their associated launch vehicles (boosters) with only marginal flexibility. U.S. Air Force Doctrine Document-1 specifies that spacelift operations are conducted to deploy and sustain new

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<sup>1</sup> Thomas S. Moorman, Jr., “The Military Space Program – A Brief History.” <http://www.boozallen.com/publications/article/39037847> (accessed 30 September 2008).

<sup>2</sup> Les Doggrell, “Operationally Responsive Space (ORS): A Vision for the Future of Military Space,” *Air & Space Power Journal* (Summer 2006), 4. <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj06/sum06/doggrell.html> (accessed 24 September 2008). A launch-to-schedule methodology is one in which satellite launches are planned in advance (usually by several years) due to the number satellites needed within a constellation and the projected useful service life of individual satellites.

satellite constellations on a predictable schedule, as well as to augment “in response to contingency requirements, crisis, or war.”<sup>3</sup> In accordance with this doctrine, the U.S. Air Force has repeatedly demonstrated the ability to conduct space launch operations in order to deploy and sustain space systems, but has never been able to respond to unforeseen needs of theater commanders. For example, during Operation DESERT STORM, planners identified the requirement for additional communications capacity in September 1990, but despite their best efforts the Air Force was unable to launch a new Defense Satellite Communication System satellite until 11 February 1992—11 months after the war ended!<sup>4</sup> So evident was the lack of responsiveness, all seven metrics pertaining to spacelift in the Universal Joint Task List (UJTL) use “months” as the time standard for measuring performance—and one even uses “years”<sup>5</sup> Additionally, the UJTL categorizes all space launch activities as “Strategic-National” level tasks, with no mention of space launch operations occurring in lower level activities. Sadly, launch latency is still an issue today.

The 1990’s witnessed many discussions advocating the need for more flexible launch capabilities and systems, but these were mostly confined to military colleges and academic institutions. Not until United States Space Command (USPACECOM) included the concept of “launch on demand” in its 1998 Long Range Plan did the idea of event-driven space launch reach the policy development circles.<sup>6</sup> The Air Force followed this with a Mission Needs Statement in 2001 and an Analysis of Alternatives in 2003 for a more responsive means of conducting spacelift operations. In January 2005, the President signed National Security Policy Directive (NSPD) 40, U.S. Space Transportation Policy, recognizing that the

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<sup>3</sup> Air Force Doctrine Document (AFDD), “Air Force Basic Doctrine,” 1 September 1997, 57.

<sup>4</sup> Les Doggrell, 2.

<sup>5</sup> Joint Staff, “Chairman Joint Chiefs of Staff Manual (CJCSM) 3500.04D: Universal Joint Task Listing,” Change 1, 1 August 2005, B-C-A-77 thru B-C-A-79.

<sup>6</sup> United States Space Command, “Long Range Plan,” April 1998, Ch 5.

nation must be able to “augment space-based capabilities in a timely manner in the event of increased operational needs or to minimize disruptions. . . .”<sup>7</sup> Additionally, NSPD-40 specified the requirement to reach an initial capability for operationally responsive access by 2010, and assigned the Secretary of Defense (SECDEF) various responsibilities to develop the requisite capabilities.<sup>8</sup> This was followed in 2006 with new National Space Policy restating the SECDEF’s responsibility of providing “reliable and timely” space access for the defense and intelligence sectors for national security purposes.<sup>9</sup> Later that year, House Resolution 5122 mandated the formation of an ORS plan to include identification of the roles and responsibilities of the service departments, a schedule for plan implementation, and identification of necessary capabilities covering a ten-year period.<sup>10</sup> All of these actions coalesced in 2007 when the National Security Space Office (NSSO) and United States Strategic Command (USSTRATCOM) teamed up to produce the seminal ORS Plan and the ground-breaking Concept of Operations (CONOPS).

At first glance, it appears that seventeen years after the first “space war” the nation is finally moving toward fielding a responsive spacelift capability, one eventually flexible enough to fulfill on-demand surge and replenishment requirements of joint operational-level commanders. But, in order to satisfy the developing needs of warfighters, ORS needs to extend beyond faster launch systems and pre-positioned reserve satellites, and needs to ensure it can translate its capabilities to provide the space effects required by Joint Force

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<sup>7</sup> U.S. President, “NSPD-40 U.S. Space Transportation Policy,” Fact sheet, 6 January 2005, 1-2 <http://www.spaceref.com/news/viewsr.html?pid=pid> (accessed 10 September 2008).

<sup>8</sup> Ibid, 4.

<sup>9</sup> U.S. President, “U.S. National Space Policy,” 31 August 2006, 4. <http://www.nss.org/resources/library/spacepolicy> (accessed 10 September 2008).

<sup>10</sup> House, *John Warren National Security Defense Act for Fiscal Year 2007*, 109<sup>th</sup> Congress, HR 5122, Section 913.

Commanders (JFCs) when and where required. Just as important as the hardware and capabilities is the ability to tie into JFCs' planning systems.

### **Operationally Responsive Space (ORS) Unveiled**

The DOD officially defines ORS as "assured space power focused on timely satisfaction of Joint Force Commanders' needs."<sup>11</sup> It contains two key elements: an element of assurance of capabilities and timely delivery. Through robust, proven, and readily accessible means the nation will provide space effects and services within an operationally-relevant timeframe prescribed by the joint commander during peace, crisis, and war. Since Operation DESERT STORM the nation has progressively improved the data products and services available to fielded forces, but its ability to tailor them to specific JFCs and be able to replenish and augment them rapidly has been questionable at best. In a significant departure from previous space efforts, ORS seeks to give priority to theater space needs, in essence shifting the paradigm founded in its strategic roots. But ORS isn't just about increasing responsiveness to last-minute needs it also includes a level of daily anticipatory activities.

Seen in broad terms, ORS intends to provide the nation with the capability to reconstitute lost space systems, augment current existing systems, fill unanticipated capability gaps, increase capabilities through technical and operational innovations, and react to unanticipated or episodic events—all conducted rapidly on operationally-relevant timelines.<sup>12</sup> The cumulative effect of these capabilities will bolster survivability and adaptability of the nation's space-based systems and therefore provide a level of deterrence. It is composed of three tiers: employ existing capabilities, launch/deploy new capabilities,

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<sup>11</sup> National Security Space Office (NSSO), 2.

<sup>12</sup> Ibid, 4.

and develop new approaches and systems (see Fig. 1). Response times increase from shortest during Tier-1 activities to longest occurring during Tier-3. Initially they might take 36 months to respond, but the envisioned end state is less than 1 year.<sup>13</sup>

Tier-1 efforts seek to modify, improve, and adapt current capabilities available from existing on-orbit systems and associated ground-based infrastructure. Once the need is identified, the goal is to provide the requested capability as immediately as possible, and not to exceed several days. It doesn't require the manufacture of new equipment, but addresses the problem from providing data, modifying current processing methods, looking for potential fusion benefits, etc.<sup>14</sup> In short, Tier-1 looks to leverage deployed systems in new ways to meet new needs of the JFC, something the space providers have become adept at although with priority historically focused on satisfying strategic-level users. While this issue could use more study it isn't the focus of this paper and won't be discussed further.

Tier-2 is the most progressive, and seeks to remedy the historical inability of the Air Force to deviate from a launch-to-schedule program. It proposes to utilize newly-developed yet proven launch vehicles and small satellites, stored on-hand as War Reserve Materiel at key locations and launch bases, to rapidly respond to emergent needs of theater commanders and strategic-focused agencies. Tier-2 operations would best be suited for augmenting or

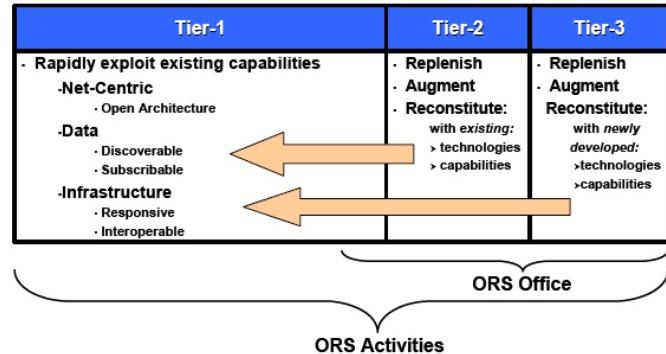


Fig. 1. Tiered Approach to Enhance Responsiveness of Space Capabilities (reprinted from the National Security Space Office's *Plan for Operationally Responsive Space: A Report to Congressional Defense Committees*, 17 April 2007)

<sup>13</sup> U.S. Strategic Command, "Operationally Responsive Space Concept of Operations," May 2007, 8.

<sup>14</sup> National Security Space Office (NSSO), 4.

reconstituting existing on-orbit systems.<sup>15</sup> The need to launch new satellites and place new satellites into orbit would be determined by the coverage and capabilities of existing on-orbit satellite constellations, and the resultant coverage gaps and capability shortfalls as defined by the JFC’s operational requirements. The criteria used to determine if a launch, or multiple launches, is needed would be event-driven. Inherent in Tier-2 operations is the need for enhanced coordination and integrated planning, which will serve as the focal point of the remainder of this paper. The Tier-2 activities are expected to occur as earlier as within several days of the request, but not to exceed several weeks.<sup>16</sup>

Tier-3 efforts are longer term, and focus heavily on identification of new forecasted needs and shortfalls, and conducting necessary research, development, test and evaluation (R&DTE) activities to deploy necessary capabilities. However, these activities have to occur with a level of rapidity to avoid protracted (and costly) timelines—the questionable bane of many acquisition programs—and therefore have a stated desired timeline of “months to 1 year.”<sup>17</sup> This is a daunting challenge, the aggressive nature of which will require a level of anticipation of potential new capabilities and likely emergent needs. Because Tier-3 activities mostly fall outside of the operational commanders’ concern, they won’t be discussed in any further detail throughout the remainder of this paper.

Although ORS requires the continuous coordination with all of the services, the functional and geographical combatant commands, and numerous governmental agencies, success hinges on the efforts two particular organizations: the joint ORS Office and USSTRATCOM. The first is primarily focused on the acquisition aspects of ORS while the latter is concerned with operations (both planning and execution).

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<sup>15</sup> U.S. Strategic Command, 11.

<sup>16</sup> National Security Space Office (NSSO), 4.

<sup>17</sup> Ibid.

The new ORS Office was activated at Kirtland Air Force Base (AFB), New Mexico, on 21 May 2007. It derives its required acquisition authorities directly from the DOD Executive Agent (EA) for Space—the Under Secretary of the Air Force—who in turn directs and controls the organization.<sup>18</sup> The ORS Office is responsible for developing, acquiring, and demonstrating the breadth of capabilities that underpin the ORS concept. In the short term these efforts are centered around developing a responsive launch vehicle, proving and acquiring quickly configurable satellites (e.g., the Tactical Satellite program), and ensuring requisite range infrastructures can support the program. To perform its duties the ORS Office is dividing its efforts among five specific functions: User Support, Concepts and Solutions, Science and Technology, Acquisition, and Operations Support.<sup>19</sup> These functions form the basis of its organizational structure as depicted below (Fig. 2).

For its part, USSTRATCOM's ORS responsibilities are embedded within its existing Unified Command Plan (UCP) missions of conducting space operations. According to joint doctrine this is further divided into four unique mission areas: Force Application, Space Control, Space Force Enhancement, and Space Support.<sup>20</sup> Although ORS is applicable to all, only

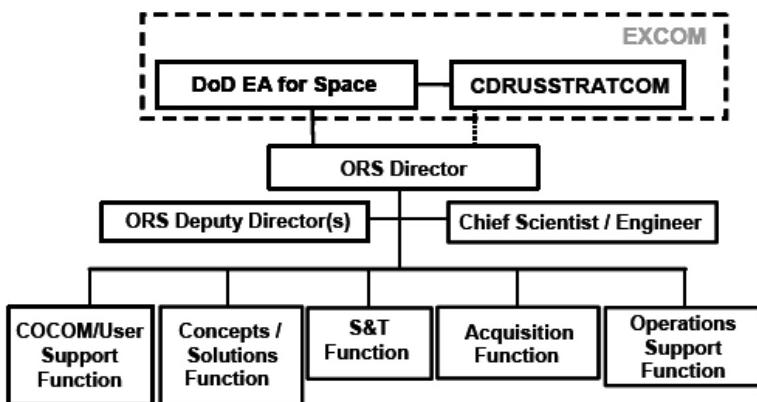


Fig. 2. ORS Core Office (reprinted from the National Security Space Office's *Plan for Operationally Responsive Space: A Report to Congressional Defense Committees*, 17 April 2007)

<sup>18</sup> National Security Space Office (NSSO), 8.

<sup>19</sup> Ibid, 5-7.

<sup>20</sup> Joint Staff, "Joint Publication (JP) 3-14: Joint Doctrine for Space Operations," 9 August 2002, X.

the last two mission areas are of interest for the purposes of this paper. In general terms, Space Force Enhancement is comprised of all of the services and capabilities today's warfighter receives from space systems. It represents the various applications fielded forces take for granted—until they fail or are unavailable. Space Force Enhancement activities include space-based communications, intelligence, weather, navigation, missile warning, and other uses familiar to military forces. However, none of these capabilities would exist if the nation couldn't adequately perform the Space Support mission area—a collection of activities relatively transparent to anyone outside of Air Force Space Command. Joint doctrine captures the mission area best when stating:

Space Support operations consist of operations that launch, deploy, augment, maintain, sustain, replenish, de-orbit, and recover space forces, including the command and control network configuration for space operations. Support operations consist of spacelift, satellite operations, and de-orbiting and recovering space vehicles, if required. (Joint Publication 3-14 2002, X)

In essence, the Tier-2 ORS activities of launching and commanding satellites would fall squarely within the Space Support mission area.

But USSTRATCOM's UCP-designated mission isn't restricted solely to the execution of space operations, but also includes the responsibility for all associated planning of those military space operations.<sup>21</sup> While the planning efforts performed by the ORS Office focus on requisite requirements and systems, the Guidance for the Employment of the Force (GEF) directs how USSTRATCOM's planning efforts are dedicated toward integrating space capabilities into campaign and crisis action plans of all the combatant commanders, as well as developing plans uniquely suited for its own functional needs.<sup>22</sup>

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<sup>21</sup> U.S. Strategic Command, 4.

<sup>22</sup> Secretary of Defense, "Guidance for the Employment of the Force (GEF)" (U), May 2008 (Secret).

## **Discussion/Analysis**

*Space started in an R&D mode; it has difficulty moving to an operational mode.*

— General Ronald Fogelman, CSAF

Due to their potential impact to the success of ORS, two aspects of the current structure require further analysis and are discussed below. They include: (1) manning and associated authorities, and (2) the planning process.

Currently, although the Unified Command Plan assigns space operations to USSTRATCOM, not all applicable units are assigned to the command. More specifically, despite the “Force for Unified Commanders” memorandum assigning “historic offensive strategic and space” forces to USSTRATCOM, it fails to identify any units currently tasked with performing spacelift operations.<sup>23</sup> The root cause appears to be the “organize, train, and equip” service functions detailed in DOD Directive 5100.1. This includes conducting R&D, procuring equipment, and maintaining lines of communications. In the case of the U.S. Air Force, this also includes providing space launch and space support capabilities.<sup>24</sup> Historically, because spacelift is heavily founded on R&D and engineering, it has been viewed by the Air Force as an acquisition activity and is overseen by Air Force Space Command’s acquisition component—the Space and Missile Systems Center. It is also reflected in the leadership of spacelift squadrons, who are typically commanded by acquisitions officers and not space operations officers. Sadly, this is one issue ORS doesn’t attempt to remedy. For example, while the ORS CONOPS identifies the need to establish combatant command authority (COCOM) over “newly deployed/developed ORS operational

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<sup>23</sup>Secretary of Defense, “Forces for Unified Commands” memorandum for FY2006, (no date given), I-1.

<sup>24</sup> Secretary of Defense, “DOD Directive 5100.1: Functions of the Department of Defense and Its Major Components,” 1 August 2002, 11-22.

systems...and associated operational units,” it explicitly excludes seeking to do it for ORS “spacelift” systems. Additionally, while the ORS CONOPS makes clear arrangements for establishing appropriate command authorities for its oversight of “satellite telemetry, tracking and commanding (TT&C) functions for ORS platforms,” it omits specifying any command authorities for ORS-related spacelift activities.<sup>25</sup>

The synchronization (in time and space) and integration of forces to achieve an established objective is one of the key aspects of planning, and includes all phases—mobilization, deployment, employment, and sustainment of forces.<sup>26</sup> Existing joint doctrine captures the importance of JFCs inculcating space factors into their plan development activities by stating:

Commanders must address space force use during deliberate planning to effectively integrate space forces within the theater, to counter an adversary’s use of space, to maximize use of limited space assets, and to consolidate theater operational requirements for support from space. (JP 3-14 2002, V-1)

However, the inability to responsively launch new satellites in reaction to real-world events and conditions led to the “forward deployment” of space capabilities, and limited the importance of involving space-smart planners. Planning activities centered on the projected state of health of various satellite constellations. Projected capability shortfalls were anticipated to be addressed by leasing available commercial services where available. Discussions definitely did not include the conceptual rapid launching of new payloads, held in strategic reserve, to overcome operational deficits—because as we’ve established, the capabilities to do so didn’t exist. The promise of ORS capabilities requires a renewed, realistic update of JFC war plans, and to introduce for first time an element of true space operations into campaign and crisis action plans.

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<sup>25</sup>U.S. Strategic Command, 12.

<sup>26</sup> Joint Staff, “Joint Publication 5.0: Joint Operations Planning,” 26 December 2006, I-4.

In some instances the situations requiring execution of Tier-2 operations will be predictable and should be appropriately addressed within the contingency planning process, while at other times will require utilization of crisis action planning processes. The current version of the GEF contains specific direction to guide USSTRATCOM's campaign planning activities. However, although ORS capabilities are implied in some of GEF entries (e.g. maintaining “unhindered” space access, possessing “freedom of action,” etc) they certainly aren’t specified to the degree necessary for the nation to capitalize on their full potential.<sup>27</sup>

Historically, space capabilities are included in several annexes, but are mostly specified in Annex N (Space Operations). However, in order to be effectively employed in the future, inclusion of ORS capabilities will extend beyond these historically-prescribed annexes. This point is detailed within USSTRATCOM’s ORS CONOPS when it states that, “ORS capabilities will be considered during evaluation, assessment, and analysis of JFC Courses of Action (COAs) along with solutions utilizing other media (e.g., air, cyberspace, etc).<sup>28</sup> This requires that theater planning staffs possess space savvy planners and maintain well-established relationships with USSTRATCOM, the designated Joint Functional Component Commander for Space (JFCC-Space), and Air Force Space Command. These relationships and the associated reachback will extend to the execution of actual ORS operations. Although ORS activities might be incorporated into a theater Air Operations Center, only the JFCC-Space at Vandenberg AFB possesses the requisite command and control infrastructure, to include unique workcenters such as the Space Control Center and the Joint Space Operations Center, to successfully oversee 24-hour operations. Effective, and early, recognition of potential ORS solutions also requires well established and

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<sup>27</sup> Secretary of Defense, “Guidance for the Employment of the Force (GEF)” (U), May 2008 (Secret), 70-71. The identified items are contained in 2.a and 5.a and are marked “Unclassified.”

<sup>28</sup> U.S. Strategic Command, 9.

transparent request processes. To address these issues, USSTRATCOM has created an ORS needs submittal process, captured it in detail in an instruction, and made it available to all potential users.<sup>29</sup> This new process merely offers another method for JFCs to request ORS support, and will compliment pre-existing methods such as Joint Urgent Operational Needs, Evaluation Request Messages, and request for Forces.<sup>30</sup>

## Conclusions

The force enhancement and force multiplying effects provided by space products and space systems are critical enablers to today's military operations, and are essential for achieving success on the modern battle ground. The Global Positioning System (GPS) has enabled precision engagement through accurate weapons delivery and assured navigation, Blue Force Tracking has aided commanders in establishing a real-time picture of friendly force distribution throughout the battle space, Defense Support Program payloads have enabled timely and definitive over-the-horizon missile warning and attack characterization, as well as systems aiding intelligence, weather, and reconnaissance. All of which have been supported by a variety of communication capabilities. They offer unprecedented levels of access and persistence, and enable U.S. forces to conduct global operations with significantly reduced logistics.

Despite advances in technology the means for our nation to rapidly respond to emergent needs was limited and primarily focused on utilizing non-military sources. For example, 80% of satellite communications used by U.S. military forces during Operation IRAQI FREEDOM were provided by commercial systems because existing military

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<sup>29</sup> U.S. Strategic Command, 12. Strategic Command Instruction 534-19 (Operationally Responsive Space) is posted on the SIPRNET for all unified commands and DOD agencies to reference.

<sup>30</sup> Ibid.

capabilities couldn't provide the necessary capacity and the nation lacked the ability to launch new satellites within the JFC's operational timelines.<sup>31</sup> The unique nature of military space systems and the capabilities they provide, coupled with increased recognition by potential adversaries of U.S. reliance on them, demand we finally address the root issue—responsiveness. In 2002, prior to the use of GPS jammers by Iraq during Operation IRAQI FREEDOM and before the first successful Chinese anti-satellite missile intercept, Joint Publication 3-14 identified that "commanders must anticipate hostile actions that attempt to deny friendly forces access to or use of space capabilities."<sup>32</sup> However, joint spacelift capabilities provided the JFCs with limited solutions to augment insufficient capabilities or replace damaged, degraded, or destroyed on-orbit systems.

The ORS concept codified in the NSSO's plan and USSTRATCOM's Concept of Operations appears to vector the DOD on the right course to overcome past challenges. However, the envisioned capabilities won't be readily available tomorrow—as specified by USSTRATCOM, initial Tier-3 activities could take up to 36 months before normalizing to meet the desired level of responsiveness.<sup>33</sup> The lead organizations require time to establish themselves and mature their processes. Additionally, the foundational satellites and launch vehicles will have to be tested, procured, and prepositioned and aren't estimated to be in sufficient quantities until FY2015 to address scenarios requiring sustained launches, despite having an initial operational capability established in FY2013.<sup>34</sup> This also requires dedicated commitment of funding, and identification and refinement of theater requirements. Most

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<sup>31</sup> Air Force Doctrine Document (AFDD) 2-2.1, "Counterspace Operations," 2 August 2004, 23.

<sup>32</sup> JP 3-14, I-1.

<sup>33</sup> U.S. Strategic Command, 8.

<sup>34</sup> Air Force Space Command, *Air Force Investment Strategy for ORS*, briefing charts presented on 11 September 2008, 8.

important, the ability to integrate ORS capabilities into theater plans requires significant effort by planning staffs at the unified combatant commands and service components.

## **Recommendations**

*Every unit that is not supported is a defeated unit.*

—Field Marshal Maurice, Comte de Saxe, 1732

While researching and writing this paper the author identified several items requiring additional study and action. These items include updating several doctrine and planning guidance documents, potentially implementing additional organizational changes, and the need to continue on-going efforts in several areas. There has been tremendous progress in the past two years on a problem that has existed since the beginning of U.S. space programs, and the following recommendations will increase ORS's chances for success.

The first, and most significant, item requiring attention is the identification and assignment of forces. There are obvious benefits for acquisitions personnel within the ORS Office accomplishing long-term, acquisition-intensive Tier-3 activities. However, Tier-2 spacelift functions aren't envisioned as being R&D or procurement focused, and could potentially benefit from an operation's approach instead of the historical acquisitions mentality. This isn't a new train of thought. For example, the 1994 Space Modernization Plan advocates a shift away from a 'launch' mentality to an 'operations mentality.'<sup>35</sup> But, never since the inception of the nation's space launch activities has the Air Force been given the opportunity to reassess its current business practices and make sweeping changes. The deployment of ORS launch vehicles, with a supply of on-hand satellites, offers a solid

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<sup>35</sup> Baird, Henry D., Steven D. Acenbrak, William J. Harding, Mark J. Hellstern, Bruce M. Juselis, "Spacelift 2025: The Supporting Pillar for Space Superiority," August 1996, Ch 1.  
<http://www.fas.org/spp/military/docops/usaf/2025/v2c5-1.htm> (accessed 12 September 2008).

opportunity to re-think (and potential shift) existing paradigms and truly operationalize spacelift.

The third potential area for improvement focuses on joint doctrine. The current version of joint space doctrine (JP 3-14 Joint Doctrine for Space Operations) was signed on 9 August 2002 after over 12 years of staffing, coordination, and compromise between the services and U.S. Space Command. More important than being over six years old, large portions of its contents are out of date. For example, it details the Deliberate Planning Process and specifies responsibilities for U.S. Space Command—a functional command that was deactivated within weeks of the publishing of JP 3-14. However, one of the glaring inadequacies is the lack reference to any aspect of ORS.

Next, various planning documents fail to reflect ORS capabilities. Both the GEF and Joint Strategic Capability Plan (JSCP) should be reviewed for potential ORS-related additions or changes. These documents provide guidance for FY2008 – FY2010 timeframe, which is potentially two years after initial Tier-1 & -2 activities could potentially be incorporated into combatant commanders' contingency plans. Additionally, the UJTL should be reviewed and amended to introduce new “ORS-related” spacelift activities with appropriately decreased time standards for assessing measures of performance. Consideration of including ORS tasks in either the “Strategic-Theater” or “Operational” levels should be considered. In accordance with the newest version of the UJTL—Chairman Joint Chiefs of Staff Manual (CJCSM) 3500.04E, implemented on 25 August 2008—amendments should be submitted, staffed, and updated via the UJTL Task Development Tool (UTDT) process.<sup>36</sup>

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<sup>36</sup> Joint Staff, “CJCSM 3500.04E: Universal Joint Task List,” 25 August 2008, 2.

The fifth item involves the continued education of all stakeholders regarding ORS capabilities, deployment schedules, and refinements to the USSTRATCOM-led planning integration process. Obviously this includes all of the geographic combatant commands and services, but it also includes other key DOD agencies, intelligence agencies, and industry partners. It should address the current capabilities, specified Tier-1 through -3 goals, organization and responsibilities, and how to plug requirements into it. This effort is ongoing, but requires continuation.

Finally, to be successful, ORS requires dedicated and adequate funding and manpower. Initial investments will be required to establish the various organizations associated with ORS. Additionally the foundational Tier-2 capabilities (e.g., rapidly configurable satellites, quick-turn launch vehicles and associated mobile launch platforms, dedicated satellite command and control ground stations, etc.) will need to be developed, tested, bought in sufficient quantities and prepositioned at key launch areas. In the ORS CONOPS, USSTRATCOM identifies this as a critical action and correctly assumes responsibility for working with the services to attain funding to enable an adequate response to “emergent and unforeseen needs.”<sup>37</sup> But building Program Objective Memorandums (POMs) must occur several years in advance, and is dependent upon the military services to incorporate JFC requirements.

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<sup>37</sup> U.S. Strategic Command, 9.

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